



Prefetching by Self-Contained Variables - a Generalization from Array to Recursive Data Structures

DOI Bookmark: <http://doi.ieeecomputersociety.org/10.1109/AISPAS.1997.581667>

2nd AI

Chan, National University of Singapore
Wai-wai, National University of Singapore
Chi, National University of Singapore
Chi-hung, National University of Singapore

Data prefetching has been proven to be effective in hiding the memory latency from the program execution time. Most current data prefetching schemes target only for array references with constant strides. For array references with non-constant strides, they lose most of their effectiveness. In this paper, we propose a novel data prefetching scheme based on a property, called the Self-Containness of Variables, which is widely available in most loop-rich applications. We observed that the update pattern of a self-contained variable in a loop can be accurately predicted. The predicated value can then be used for accurate data prefetching if the variable is the only loop-variant component of an address expression in a memory access instruction. With suitable hardware support, this scheme can be used to prefetch data from recursive data structures in addition to array elements. Moreover, the coverage of this scheme is highly selectable. It can be customized easily to fit the cost-performance requirements of different processors that are designed for different applications.

Citation:

Chan, Wai-wai, Chi, Chi-hung, "Prefetching by Self-Contained Variables - a Generalization from Array to Recursive Data Structures," pas,pp.225, 2nd AIZU International Symposium on Parallel Algorithms / Architecture Synthesis (pAs '97), 1997

This Article



[PDF](#)

[HTML](#)



[IEEE Xplore Sul](#)

Share

[Email this Article](#)

Bibliographic References

[ASCII Text](#)
[BibTeX](#)
[RefWorks](#) [Procite](#)

Add to:



Search

[Similar Articles](#)
[Articles by Chan](#)
[Articles by Wai-w](#)
[Articles by Chi](#)
[Articles by Chi-hu](#)

[Peer Review Notice](#) | [Give Us Feedback](#)

Usage of this product signifies your acceptance of the [Terms of Use](#).

MCC IEEE-488 Interfaces

Low cost IEEE-488 interfaces for PCI, ISA, PCMCIA and USB buses
www.measurementcomputing.com

Xplore Tablet pc iX104

Features an Alluvue Touchscreen, High Security Measures. Visit Now!
www.XploreGeo.com

Google Search Advertising

Invest In Finding New Customers & Start Growing Your Business Today!
adwords.google.com

Online Job Search Engine

Free Career Page, Trackable Resume, Job Matching = The Perfect Job.
www.jobfox.com

 Ad by Google

This site and all contents (unless otherwise noted) are [Copyright](#) © 2008 IEEE. All rights reserved.